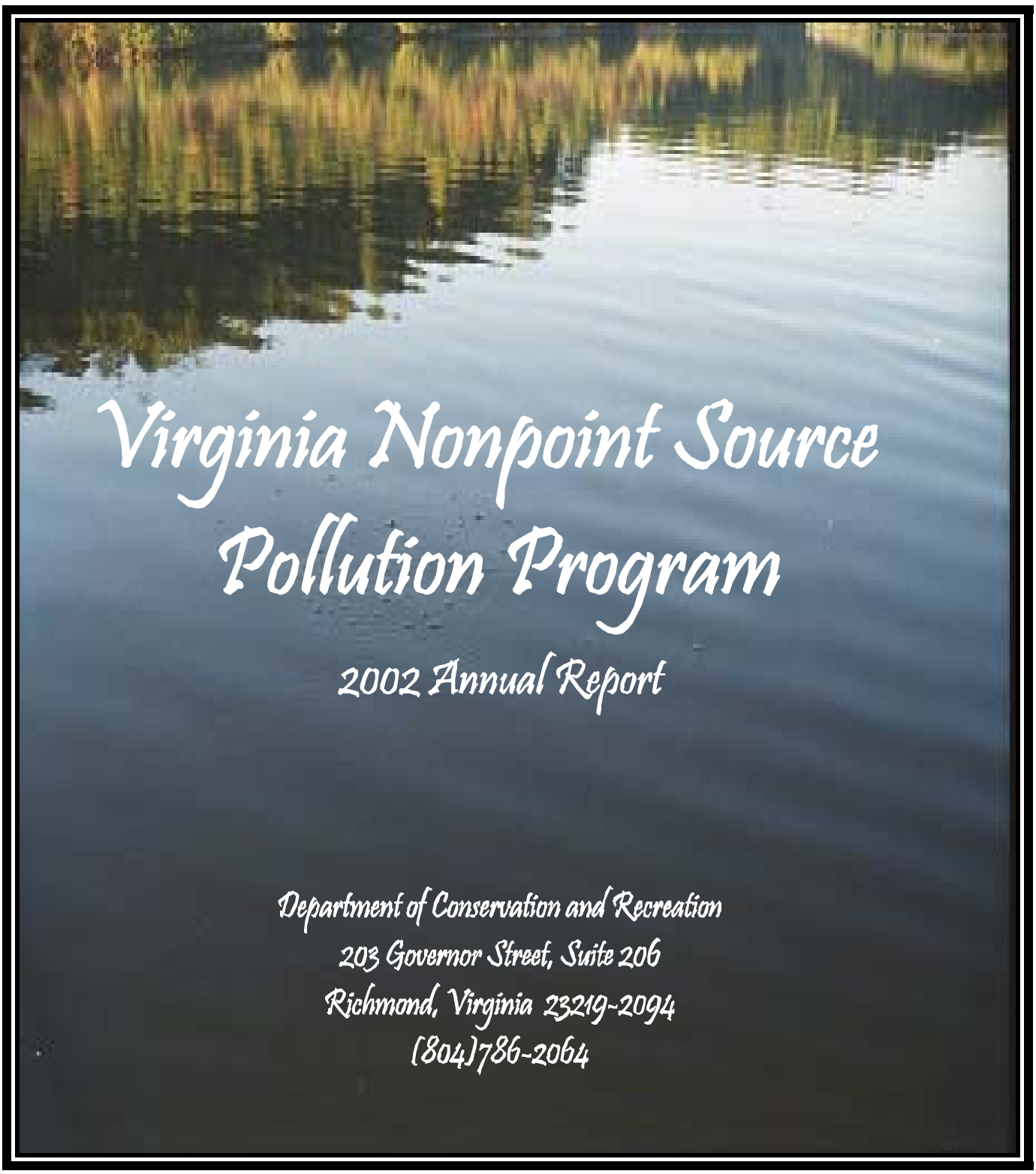

Virginia Nonpoint Source Pollution Program

2002 Annual Report

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DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL AND RECREATIONAL RESOURCES

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Executive Summary

Virginia's Nonpoint Source Pollution Management Program is a diverse network of state and local government programs that collectively help prevent degradation of water quality and restore the health of our rivers, lakes, and bays. This report describes activities of the Commonwealth of Virginia's program.

The efforts to address nonpoint source pollution highlighted in this report reflect the commonwealth's commitment to protecting and restoring our natural resources. This annual report describes anticipated pollution reductions that will be achieved through agricultural cost-share assistance and water quality improvement projects. In addition, the report describes pollution prevention accomplishments related to implementation of the Nonpoint Source Pollution Management Program.

Meeting water quality standards for streams listed on Virginia's 303(d) List of Impaired Waters due to nonpoint sources of pollution is a primary focus of Virginia's program. Total Maximum Daily Load implementation plans have been developed for impaired waters in the North River, Middle Fork of the Holston River, and the Blackwater River. In order to maximize water quality benefits, approximately $1,500,000 of Environmental Protection Agency (EPA) Section 319(h) funds have been targeted, annually, toward restoration efforts in these areas.

Based on the level of implementation of best management practices (BMPs) funded through Environmental Protection Agency (EPA) Section 319(h) funds, it has been estimated that 326 trillion bacteria, or colony forming units, will be eliminated, annually, from the Hutton, Byers, Hall and Cedar Creeks, which are tributary streams to the Middle Fork of the Holston River in Washington County. Additionally, 1.61 trillion bacteria would be eliminated, annually, from the Blackwater River Basin in Franklin County. These levels of reduction are based on the number of practices installed as of June 30, 2002, and additional implementation is continuing in these TMDL implementation areas that are being funded through the EPA Section 319 grant. Although, numbers are not available during this reporting period, we anticipate comparable or greater reductions within the North River watershed areas.

There are also benefits of reduced nitrogen, phosphorus and sediment loadings associated with implementation efforts aimed at reducing fecal bacteria in these bacterially impaired waters. These reductions include 14.2 pounds of nitrogen, 0.18 pounds of phosphorus, and almost one half ton (0.42) of sediment per year in Washington County. Estimated reductions of nitrogen loadings for the Blackwater River are 11.33 pounds per year.

These pathogen, nutrient, and sediment reductions represent a major water quality accomplishment that has been achieved through on-the-ground implementation of agricultural and residential BMPs. Other accomplishments highlighted in this report help to ensure that Virginia meets its responsibilities to protect and restore water quality throughout the commonwealth.

However, without sufficient funding and the flexibility to address priority water quality issues, it will be difficult, if not impossible, to meet the challenge of protecting water quality in Virginia. Indeed, the reduction in state Water Quality Improvement Funds, and other resource limitations, constitute a significant impediment to implementation. The loss of flexibility in the use of Section 319(h) funds constitutes another potential obstacle to implementation. Increasingly, the use of these funds is being pre-determined by federal guidance. State discretion to target all available funding, based on identified priorities and the management program, is essential, if we are to meet the long-term water quality challenges in the Commonwealth of Virginia.

Nonpoint Source Pollution Program Goals And Annual Report Overview

The Virginia Nonpoint Source Management Program is coordinated by the Department of Conservation and Recreation (DCR) as set forth in Section 10.1-104.1 of the Code of Virginia. This role includes the oversight of program development an d implementation and interfacing with the Environmental Protection Agency to ensure that Virginia's program is in conformance with the requirements of the Clean Water Act of 1987. DCR is also responsible for the management and distribution of federal and state funds for program implementation. DCR performs these duties with the assistance and guidance of the Nonpoint Source Advisory Committee (NPSAC).

NPSAC is an interagency committee, chaired by DCR staff, comprised of representatives of all federal and state agencies that share responsibilities for nonpoint source program implementation in Virginia. The mission of this committee is to serve as an interagency forum to facilitate effective implementation of nonpoint source programs in Virginia, and to achieve and maintain beneficial uses of water throughout the commonwealth. The agencies represented on NPSAC, and the respective contacts, include the following:

- Chesapeake Bay Local Assistance Department
- Dept. of Agriculture & Consumer Services
- Department of Conservation and Recreation
- Department of Environmental Quality
- Department of Forestry
- Department of Game and Inland Fisheries
- Department of Health
- Department of Mines, Minerals and Energy
- Department of Transportation
- Virginia Cooperative Extension
- Virginia Marine Resources Commission
- USDA Farm Services Agency
- USDA Forest Service
- USDA Natural Resources Conservation Service
- US Fish and Wildlife Service
- US Geological Survey

Virginia's Mission Statement:

To control nonpoint source pollution, to restore and protect living resources and maintain other beneficial uses of Virginia=s waters, and to help assure the protection of Virginia=s outstanding quality of life

This annual report fulfills the reporting requirements set forth in federal guidance issued by the Environmental Protection Agency. It also serves to document that the Commonwealth of Virginia is achieving satisfactory progress in implementing the Nonpoint Source Pollution Management Program.

For most program areas, this report covers the 2002 calendar year. However, due to differing funding periods and data availability, the specific reporting period varies based on program area.

As reflected in this report, we continue to make progress in implementing the Virginia Nonpoint Source Pollution Management Program and we target on-the-ground implementation toward the Blackwater, North River, and Middle Fork Holston watersheds. We anticipate that these impaired water-bodies will remain a priority for future implementation efforts. In addition, we are developing total maximum daily load (TMDL) implementation plans for two additional watersheds. We expect these plans to be completed during the ensuing year.

The following objectives, from the *Nonpoint Source Pollution Management Program,* summarize priority goals for specific state programs during 2002:

Watershed Prioritization

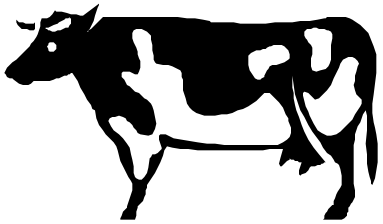
Objective 1

By 2004, establish well integrated and coordinated basin planning and management programs that minimize program overlap and

leverage program resources to address contaminants that may pose risks to either the environment or public health

Objective 3

By 2003, the Department of Environmental Quality (DEQ) and the Department of Conservation and Recreation will develop the protocols and data needed to prioritize total maximum daily load (TMDL) development based on severity of impact



Agriculture

Objective 1

Provide assistance to producers to ensure that farms accounting for 60 per cent of the state's total number of beef, dairy, and swine animals in confinement will have adequate waste management systems and nutrient management plans by 2004

Objective 2

Provide assistance to ensure that poultry farms with 200 or more animal units will implement nitrogen and phosphorus based nutrient management plans, proper waste storage practices, and waste tracking and accounting procedures by 2004

Objective 3

Provide assistance to farmers to ensure that controlled stream access practices will be installed on 30 per cent of livestock grazing operations for stream segments where pathogens, sediment, or nutrients from grazing livestock are contributing to an impairment by 2004

Forestry

Objective 4

Support the Chesapeake Bay Program Riparian Forest Buffer Directive through the establishment of at least 610 miles of riparian forest buffer by 2010 within the bay watershed and target riparian restoration throughout Virginia's river corridors

Objective 5

Foster local partnerships, ordinances and innovative strategies to conserve forest lands critical to water resources, wildlife habitat, sustainable forest industries and local communities Urban

Urban – Construction & Development

Objective 1

By the year 2005, 85 per cent of Virginia's local government adopted ESC programs will be fully consistent with the state's minimum standards of effectiveness

Objective 3

By the year 2003, establish effective, efficient and consistent enforcement of Virginia's Erosion and Sediment Control Law and Regulations

Objective 11

By the year 2003, all local governments and state agencies will be implementing effective development options and economic incentives for the preservation of natural stream channels and stream channel buffers

Objective 16

By the year 2004 establish state wide planning and development guidelines and strategies such as "Low Impact Development" and "Innovative Site Design Techniques" which specifically minimize the impacts of development on water quality

Monitoring & Tracking

Objective 1

Evaluate the state's waters for nonpoint source pollution-related problems

Objective 2

Evaluate the state's waters, on a watershed basis, for NPS pollution related problems to assist in targeting NPS pollution prevention activities

Objective 7

Improve support and use of citizen monitoring resources

Resource Extraction

Objective 1

Determine the magnitude and quantity of nonpoint source pollution impacts to the environment from abandoned coal mines, orphaned mineral mine sites, and orphaned gas and oil wells so that reclamation activities can be prioritized

Hydromodification

Objective 1

Improve the design, implementation and maintenance of BMPs installed throughout the Commonwealth

Objective 2

Strengthen and improve design standards, specifications and measures implemented for streambank restoration projects throughout the state

Grant & Technical Assistance Coordination

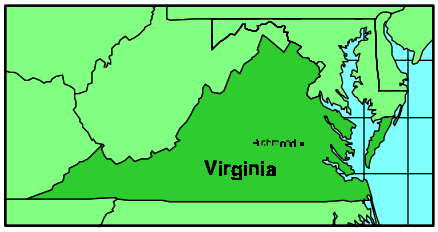
Objective 5

By 2004, cooperating state and federal agencies will assess existing technical assistance programs to ensure that they have adequate staffing and resources to meet program demands

This report is not intended to be a complete summary of activities during the year**,** but rather, to highlight significant accomplishments and to provide information relative to nonpoint source program efforts. Further information on the overall program can be obtained by contacting Rick Hill, NPS Planning and Grants Program Manager at DCR, (804) 786-7119. Your comments, questions, and feedback are welcomed and encouraged.

Highlights and Accomplishments

The Virginia Department of Conservation and Recreation has experienced many successes in managing nonpoint source pollution over the past year. Some of those accomplishments are highlighted in the following sections:



Watershed Prioritization

There is growing recognition, among state agencies, local governments, and community organizations, of the importance of watershed management in helping the Commonwealth of Virginia protect and restore water quality in the Chesapeake Bay and in our rivers, streams, and lakes. This section of the annual report highlights watershed management activities within major river basins of the commonwealth. In particular, it focuses on accomplishments and challenges identified by staff in Department of Conservation and Recreation Watershed Management offices.

Watershed offices were established to improve local delivery of nonpoint source pollution control programs and to foster and coordinate watershed management. Watershed management offices provide the framework needed to meet the Commonwealth of Virginia's long-term watershed prioritization and management goal.

(A.) CHESAPEAKE BAY WATERSHED

Shenandoah River Watershed

The Shenandoah Watershed Office has seen successes in implementing the new streamlined local government erosion and sediment control/stormwater management program review process. Local government program consistency has improved in the past year as a direct result of the more detailed program reviews. For example, Shenandoah Watershed staff worked closely with Frederick County and Botetourt County during recent program reviews, and, as a result, both localities are making substantial progress in the implementation of their NPS pollution programs.

In some instances, local governments have requested program reviews as a means to improve their application of nonpoint source pollution control programs. At the request of the City of Lexington, for example, a program review was initiated. The review will provide the city with a better understanding of how to effectively apply an erosion and sediment control program, and may result in the adoption of a stormwater management program. The City of Lexington has expressed interest in adopting such a program and is very active in pursuing grants to undertake innovative projects that improve water quality in an urban environment.

In addition, there was an increase in integrated technical assistance and complaint response to local governments and soil and water conservation districts. This assistance aided in educating local program administrators and plan reviewers and resulted in more projects complying with applicable NPS regulations. These activities support several Nonpoint Source

Pollution Management Program goals related to Construction and Development.

The Shenandoah and Upper James River Roundtables remained active, and sponsored mini-grants to directly address nonpoint source pollution. The Pure Water 2000 Forum hosted its annual meeting on April 16, 2002. Groundwater issues, citizen access to water quality monitoring data, and the commercial production of a fertilizer product from poultry litter were among topics presented. The Forum also sponsored a mini-grant program that supported numerous local projects aimed at addressing specific nonpoint source pollution issues, including septic system maintenance, creation of riparian buffers, urban nutrient management through lawn care, and citizen water quality monitoring.

Increased technical assistance from state agencies has succeeded in bringing greater attention to the need for regular inspection and maintenance of stormwater management BMPs. However, long-term maintenance continues to be an area that needs improvement.

Potomac River Watershed

Capping pollutant loading at the level set through the Potomac and Shenandoah Rivers Nutrient Reduction Tributary Strategy remains a major focus within the Potomac Watershed Office. As part of this effort, the Potomac Watershed Roundtable hosted meetings throughout the year. Active roundtable committees include: Erosion and Sediment Control and Stormwater Programs, Communications and Public Outreach, Finance, Nutrients, and Tributary Strategy Implementation. The roundtable offered recommendations to EPA on TMDLs, to the state on Shenandoah Potomac Interim Cap Strategy, and the General Assembly's Commission on the Environment on how to improve implementation of erosion and sediment control and stormwater programs.

The Potomac Watershed Forum is an annual stakeholder event sponsored by the roundtable. This event involves participants from local government, planning districts, soil and water conservation districts, nongovernmental organizations, the development industry, agriculture, and state and federal government. The Nutrient Utilization Symposium was another stakeholder event sponsored by the roundtable during the reporting period. This event attracted over 100 decision-makers in the sewage treatment, livestock, and commercial fertilizer industries. The symposium examined current and potential technologies that manage nutrients derived from animal manure, biosolids and commercial fertilizers.

A number of grant projects were successfully completed during the report time-frame, including a master gardener out reach project conducted through the cooperative extension service, and innovative stormwater management projects with the City of Manassas Park and Prince William County. Resource limitations present a major impediment to advancing with these types of projects during the ensuing year. Implementation funding will also be a significant impediment as the tributary strategy development and implementation process is initiated in the Spring of 2003.

York River Watershed

The *York Watershed Forum* hosted meetings in April and June 2002, with a primary focus on the topic of the Chesapeake Bay "environmental endpoints." Experts from VIMS and DEQ presented overviews of draft documents describing the bay-wide water quality criteria and designated use areas; and an emphasis was placed on the chlorophyll criteria. A plan was developed to redirect the focus for the upcoming year toward TMDL development and implementation in the basin.

The process to develop and begin implementation of revised tributary strategies to achieve and maintain environmental endpoints presents a formidable challenge. Resource limitations will compound this problem.

Rappahannock River Watershed

The *Rappahannock Conservation Council* and the *Rappahannock River Basin Commission* co-hosted the 5th annual Rappahannock River Basin Summit July 23-25, 2002 through three regional one-day events. The estimated 150 stakeholders attending the events discussed water quantity concerns including the drought, groundwater supplies, and the Rappahannock model water supply planning project. In addition, presentations were given and discussed relating to water quality issues, such as, stormwater controls and low impact development.

Four workgroups, under the guidance of the council and the commission, have initiated and carried out a number of projects. An Erosion & Sediment Control / Stormwater Program Administrators Forum, attended by local government program administrators from twelve counties, the City of Fredericksburg, and the Town of Colonial Beach, was held by the Development Impact Workgroup. The Rural Conservation Group held a series of classes for realtors throughout the Rappahannock watershed entitled "Enhancing

Property Values Through Natural Resources. Approximately 80 realtors have gone through this course and strong support exists for additional training in the future. The Water Allocation Group has sponsored a study and development of a model by Virginia Tech, designed to allow local governments the ability to establish and implement a regional water supply plan. It is hoped that the results of this Rappahannock model will be strong enough to be taken statewide.

Like other river basins in the Chesapeake Bay watershed, developing and implementing a revised tributary strategy for the Rappahannock River is a difficult challenge. Mobilizing public support, and interest in meeting restoration goals, will be difficult given resource limitations.

James River Watershed

James River watershed DCR staff worked with SWCDs in the three sub-basin watershed roundtables: the upper James River, piedmont James River and lower James River Roundtables. Summaries of activities follows:

(a) *Piedmont James River Watershed*

The Piedmont James River Roundtable's Tributary Strategy Steering Committee hosted a series of meetings intended to gather public input on the development of the *James River Tributary Strategy Implementation Plan.* Emphasis was placed on finding solutions for previously identified non-point source pollution problems through youth and adult education strategies. As a result of the adult education workgroup's water quality protection efforts, Southern States agreed to include a bag label encouraging landowners to follow application directions, in an effort to reduce over-fertilization of lawns. The youth education workgroup surveyed teachers within the Piedmont region to determine water quality education classroom needs. The soil and water conservation districts will use the results to assist schools with watershed and water quality education based on need and interest and also as a tool for grant application development.

(b) Lower James River Watershed

The Lower James River Roundtable is facilitated by the Hampton Roads Planning District Commission and is supported by DCR, four soil and water conservation districts, and the localities. Numerous meetings were hosted by the roundtable and topics included Chesapeake 2000 Bay Agreement (Agreement) regulatory actions, state budget and legislative actions, reports on the Agreement implementation by local government, and tributary strategy revisions.

The roundtable supported innovative cropping systems research and demonstrations for poultry litter, continuous no-till and long term no-till wheat scab control, as well as, urban soil quality demonstration plots. Three separate cooperative watershed initiative projects currently underway in the lower James River basin, and led by the City of Norfolk, include the Elizabeth River Restoration Program, Powhatan Creek Watershed Management Plan, and the Lynnhaven River Watershed Group.

(B.) SOUTHERN RIVERS WATERSHEDS

Big Sandy River Watershed

The *Big Sandy Tri-State Watershed Coalition* consists of Virginia, West Virginia and Kentucky. The 5th annual Big Sandy River Basin Coalition meeting was held on April 5-6, 2002. The primary focus of the meeting was on the intent to establish an Interstate Commission. On September 12, 2002, a meeting was held at Breaks Interstate Park to assess the available support among political leaders, in all three states, to pursue the establishment of an Interstate Commission. Based on those attending the meeting, the support was overwhelmingly in favor of establishing the commission. In addition, the Big Sandy River Basin Coalition is taking the necessary steps to become a 501(c)(3) "non-profit" organization.

Upper Tennessee Watershed

Funds were secured by Virginia, Tennessee, and North Carolina to hire two coordinators, one serving Virginia and a second one serving Tennessee and North Carolina, for the *Upper Tennessee River Roundtable (UTRR).* Since that time, a coordinator has been hired by the roundtable. Recently the UTRR submitted a grant proposal for EPA's 319 Watershed Initiative Grant. The proposal was selected as one of two "interstate" proposals to be forwarded to EPA for consideration against other states across the country. The UTRR is also in the process of refining the strategic plan so that components of the plan are stated more clearly and can be used more readily for grant writing purposes, implementation of projects, etc.

New River Watershed

The *New River Watershed Roundtable* evolved from the tri-state American Heritage Rivers Initiative and the resulting project-based New River Work Plan. The roundtable is a grassroots forum promoting partnership and information for water quality, with over 150 members from citizen groups, districts, agencies, businesses, localities, nonprofit groups, and academia. The members are working to develop the New River Watershed Strategic Plan. Subcommittees are focusing on funding, personnel, education, karst and stormwater, and urban development. The roundtable will assist DCR and DEQ in the implementation of TMDLs for the impaired tributaries of the New River.

Roanoke River Watershed

The *Upper Roanoke River Roundtable* has been established and is bringing together government, conservation groups, and industry in an effort to address issues from the headwaters to Leesville Lake. A Water Conservation Alliance was formed by the Smith Mountain Lake Association. The mission of the alliance, which consists of 23 groups, including DCR, is to involve upstream and downstream stakeholders and search for consensus on ways to influence the management of water levels and water quality throughout the Roanoke River basin.

Virginia has joined with North Carolina to form a bi-state *Roanoke River Advisory Commission*, officially established this year through General Assembly legislation in both states. The 19 advisory committee members for Virginia met December 16, 2002 to kick-off the Virginia portion of the commission. They organized, discussed future plans and priorities and elected a chairman and vice-chairman.

Albemarle and Chowan River Watersheds

The *Southern Watersheds Management Program* (SWAMP) is a watershed management and planning forum with Virginia's Albemarle Watershed and is comprised of the Cities of Virginia Beach and Chesapeake, Hampton Roads Planning District Commission, the Virginia Dare Soil and Water Conservation District and multiple state and federal agencies. SWAMP fosters coordination and collaboration amongst stakeholders to sustain the rural characteristics of the southern watershed, while promoting responsible and environmentally sound water resource and land use planning. SWAMP successes include memorandums of agreements for water-use conflicts and information exchange; multi-jurisdictional comprehensive, natural resource based planning tools; zoning ordinance modification and coordination; and demonstrated commitments by key stakeholders to the collaborative process.

A Chowan River Roundtable is in the process of being formed to address key issues, including the coordinator of water quality monitoring, integration of conservation programs, coordination with North Carolina, and fostering collaborative projects to improve the Chowan's water quality and habitat. The roundtable development is being lead by the J.R. Horsley Soil and Water Conservation District. A roundtable steering committee is established and a workshop is being planned.

Eastern Shore (Chesapeake Bay and Atlantic Coastal)

Over the past three years, with assistance and funding from DCR, DEQ and others, the Eastern Shore SWCD has facilitated the coalition of a diverse group of stakeholders, known as Virginia's Eastern Shore Watersheds Network (Network). This group has crafted a strong partnership among researchers, resource agencies, businesses, planners, elected officials, and citizens. It has evolved from the planning process of the tributary strategy to beginning to address broader water resource issues. The group will continue to support initiatives undertaken for the Tributary Strategy for Chesapeake Bay waters; however, their focus also includes the development of far-reaching goals for water quality initiatives in research, restoration, and citizen education and involvement for all Eastern Shore waters. This group is working to assure long-term continuity of collaborative programs and to create the capacity to deal with the issues and needs facing local watersheds.

The vision defined by the Network is for "…healthy, sustainable water resources on the Virginia's Eastern Shore." The Network describes its mission, "The *Network* is a diversity of partnerships promoting the stewardship of the Virginia's Eastern Shore watersheds. This stewardship is accomplished through coordinating planning, implementation, research and educational outreach of water resource conservation, restoration, and enhancement efforts."

C.) STATEWIDE PROGRAMS

NPS Pollution Education

DCR has partnered with Virginia Commonwealth University's Creative Services to develop a "Citizen Outreach" web module that will be designed to introduce basic concepts about nonpoint source pollution, local watersheds, and the impact of citizen actions on pollution abatement and prevention. The site will provide visitors with links to existing information, to DCR NPS program tools, as well as, links to other state agency websites with relevant educational tools and resources. The website will educate visitors about Virginia's major watersheds and sources of NPS pollution in each of them. Visitors to the site will receive information about Virginia watersheds flowing to the Chesapeake Bay, Mississippi River, and Gulf of Mexico. While accessing this information, site visitors will also gain knowledge of Virginia's role in EPA's Chesapeake Bay Program and commitment to the Chesapeake 2000 agreement. The web site will provide invaluable information about how citizens can reduce NPS pollution contributions from their home and backyard, thus taking an important step towards linking water quality to the actions of individuals. The site will be complete and accessible by the public by December 2002.

Watershed Field Coordinators and the Chesapeake 2000 agreement (C2K)

DCR's six watershed field coordinators work in the six major watersheds located in Virginia's portion of the Chesapeake Bay watershed. The watershed field coordinator's purpose is to implement Virginia's approach for engaging citizens to adopt various *Chesapeake 2000* agreement measures. This position acts as a liaison between DCR watershed office staff and DCR workgroups, basin and small watershed groups, local governments, planning district commissions and Virginia's roundtables. The watershed field coordinators work to promote awareness of, and involvement in, watershed stewardship and tributary strategies, by fostering partnerships among community organizations, federal, state, and local agencies, to facilitate watershed management planning and sound land use in the Chesapeake Bay region. The watershed field coordinator is a specialized position, requiring specific focus on C2K implementation throughout the bay watershed of Virginia. Within each bay watershed, the watershed field coordinator must be familiar with the various community and watershed organizations and their activities and goals. The Watershed Field Coordinator is responsible for providing citizens and various groups with information about:

- Nonpoint source pollution reduction measures
- The *Chesapeake 2000* agreement
- Watershed management planning
- Tributary strategies
- Watershed conservation roundtables
- Other DCR programs, as needed
- Chesapeake Bay Program activities, as necessary
- Funding opportunities

Small Watershed Management Planning

The *Chesapeake 2000* agreement (C2K) requires that small watershed management plans be implemented in two-thirds of the Chesapeake Bay watershed by local governments and community watershed organization partnerships. To meet this commitment, a watershed management planning guide is being developed for use, statewide, by local governments and community watershed organizations. This guide will walk groups through the process of developing and implementing a watershed management plan that addresses tributary strategies, TMDLs, and allows planning for natural resources across jurisdictional boundaries.

Watershed, Land Use, and Outreach Coordinating Committee

The Commonwealth of Virginia's Natural Resource agencies have been meeting to discuss the *Chesapeake 2000* agreement's commitments since the time of the original signing. (Some localities have implemented some of the commitment activities on a local scale). This committee has been formed to address the many commitments involving local and community action, as a group, because they have a similar purpose and audience. Each of these commitments seeks more attention to the nonpoint source pollution sources that arise from traditional land use planning and site management techniques. The commitments strive to replace traditional decision-making processes with approaches that

are more attentive to water quality needs. To do this, there needs to be participation by more types of land users and decision makers--from county planners, to locally elected officials, to community advocates and citizen groups. This committee will work to develop approaches to encouraging local governments and communities to engage in more intense and thoughtful land use management

Total Maximum Daily Load Program (TMDL)

(a) TMDL Development

Within the reporting period, 15 TMDLs were completed and approved by EPA that DCR contracted through a request for proposals (RFP). The RFP was issued to pre-qualified engineering and environmental consulting firms. One additional TMDL was contracted and is still under development. DCR also assisted DEQ in the development of TMDLs that DEQ contracted by providing land use/land cover and BMP data, attending public and stakeholders meetings, reviewing and commenting on technical memorandums, and reviewing and commenting on the draft TMDLs. DCR provided technical assistance to DEQ on TMDL methodologies which included shellfish TMDLs, benthic TMDLs, and bacteria source tracking, and assisted in policy development by attending bi-weekly TMDL coordination meetings.

(b) TMDL Implementation Projects

DCR initiated the first "pilot" TMDL implementation projects in the state. The projects are designed to follow 5 to 10-year implementation plans that were developed by Map Tech, Inc., Blacksburg, Virginia. The projects address three fecal coliform impaired stream segments in the Middle Fork Holston area of Washington County, three fecal coliform impaired stream segments in the Blackwater River area of Franklin County, and four fecal coliform impaired stream segments in the North River area of Rockingham County. In addition, one of the four has an impairment for nitrate-nitrogen that is also addressed by the implementation plan. DCR contracted with the Holston River Soil and Water Conservation District (SWCD), Blue Ridge SWCD, and the Shenandoah Valley SWCD, respectively, to carry out the implementation projects. EPA Section 319 funds are being used for technical assistance and to implement agricultural and residential BMPs to reduce nonpoint source loadings that are contributing to the water quality standards violations.

DCR expanded its Cost-share Assistance Program by adding five "residential BMPs" to provide landowner assistance in TMDL implementation areas to remove straight pipe discharges of human waste and to correct, or replace, failing on-site sewage disposal systems. DCR coordinated the writing of the technical specifications of these practices with the Virginia Department of Health. DCR also assisted each of the three districts mentioned above in the writing of *Program Design and Guidelines, TMDL – Cost-share Assistance Program for On-site Sewage Disposal Systems*.

DCR staff attended the FY 2002 Joint Federal States TMDL/NPS/WQS Training Forum in Rehoboth Beach, Delaware , May 6-9, 2002 and provided a presentation on Virginia's pilot TMDL implementation projects.

(c) TMDL Guidance Manual for Implementation Plans

DCR worked with DEQ to formulate an outline for a guidance manual to assist districts, state and federal agencies, watershed groups, and local governments in the development of TMDL implementation plans. It is anticipated that the guidance manual will be completed in early 2003. The purpose of this manual is to ensure that implementation plans that are prepared by interested parties meet the state requirements (Virginia's 1997 *Water Quality, Monitoring, Information and Restoration Act*), as well as, federal requirements. DCR and DEQ staff wrote individual chapters in the manual. Staff coordinated with other watershed planning programs (e.g. Chesapeake Bay Program small watershed plans) in an effort to integrate TMDL implementation plans with other watershed planning programs and activities.

(d) TMDL-Related Grant Projects

The TMDL staff managed Section 319 grant projects that related to TMDLs. Some, of which, included a project with USGS to expand Phase 5.0 of the Chesapeake Bay model to the Southern Rivers portion of Virginia; a project with the Biological Systems Engineering Department at Virginia Tech to conduct a long-term water quality study in the Mossy and Long Glade watersheds in Rockingham County; and a multiple tracer study with USGS to evaluate chemical source tracking methods for human sources of bacteria.

Floodplain Management

The Floodplain Management Section of DCR supports all efforts that promote sound floodplain management practices. This includes federal state and local initiatives, and specifically, the efforts of the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). For flood insurance to be available through the NFIP, the Commonwealth of Virginia and

individual localities must agree to participate in sound floodplain management activities that meet the minimum standards of the NFIP and its regulations. Local governments must adopt a NFIP compliant regulation and commit to its enforcement. There are 268 communities that currently participate in the NFIP; 16 local governments do not participate. The number of new NFIP communities has not changed since 2001.

DCR's Floodplain Management Program staff provides leadership, training and technical assistance to local governments to ensure that local floodplain programs meet or exceed the minimum standards of the NFIP. The program also supports all floodplain management initiatives within the commonwealth, including initiatives of the U.S. Army Corps of Engineers, NRCS Emergency Watershed Protection (EWP) Program, and the following FEMA program's: Community Assistance Program (CAP), Hazard Mitigation Grant Program (HMGP), Community Rating System (CRS), Flood Mitigation Assistance Program (FMAP), and Cooperative Technical Partnerships (mapping initiative).

During 2002, there continued to be one staff vacancy in DCR's Floodplain Management Program (compared to two in 2001), which had an impact on the number of technical and planning assistance contacts/visits, and the number of permit applications that program staff was able to conduct. The impact of these vacancies were compounded by the necessity for staff responses to the flooding disasters in southwest Virginia. Despite these setbacks, the Program was able to:

- Conduct 14 Community Assistance Visits (detailed evaluations of local floodplain ordinance enforcement)
- Conduct 15 Planning and Technical Assistance Visits (site visits to assist community officials and/or citizens with interpretation of floodplain ordinance or NFIP regulations)
- Respond to over 200 technical and planning assistance requests
- Conduct and participate in 4 training workshops and conferences on floodplain management
- Review over 100 applications under the 401/404 Joint Permit Application process and VDOT's Inter-Agency Coordination process.

Agriculture

Best Management Practices Program Report

The Virginia Agricultural Best Management Practices Program provides assistance to participating farmers to defray the cost of implementing best management practices. This report highlights the major accomplishments for the last calendar year. It includes the number of participating farmers, acres under program management, types and frequency of the best management practices (BMPs) used, amounts of local and private funding matches, and results.

Agricultural BMPs are techniques (technological, economic, and institutional) that treat surface water runoff associated with cropland, pastureland and animal wastes. These BMPs are primarily implemented through the Virginia Agricultural BMP Cost-share Program, administered by DCR, through local soil and water conservation districts (SWCDs). The Cost-share Program offers financial incentives to farmers and landowners (agricultural producers) to encourage the installation of BMPs on agricultural properties they manage. The Commonwealth of Virginia provides up to 75% of the cost of each BMP, a flat rate amount per acre, or a combination of a flat rate and 75% of the cost not to exceed an established individual annual funding cap. The state cost-share cap limits funding to an individual landowner in any given year to receiving a maximum of $50,000.

The number of farmers participating in the Cost-share Program reached an unprecedented high of 1,711 during the 2001 fiscal year due to an infusion of state funding provided through the Water Quality Improvement Act. However, due to a subsequent decrease in funding, the number of participating farmers fell to 1,197 in fiscal year 2002.

During the 2002 Program, the acreage under program management dropped, from a total in fiscal year 2001 of 196,000 acres, to approximately 99,000 acres. The new acres under program management are expected to be relative to the funding available for fiscal year 2003. An unprecedented 7,140 BMPs were installed during fiscal year 2001. The number of BMPs installed during fiscal year 2002 dropped to 2,974. The number of

BMPs installed is expected to be relative to the funding available for fiscal year 2003.

Historically, the demand for cost-share assistance to install BMPs has outpaced available program funds. SWCDs report that funding is still not meeting the demand from agricultural producers requesting to install BMPs at this time.

The BMPs installed through the incentive programs reduce soil loss, and prevent nitrogen and phosphorus entering streams and rivers, which adversely affect water quality. Each BMP has a different pollutant reduction factor, which is determined by the type of practice, location, and treatment of pollutants in the runoff. Due to the success of the 2002 program, an additional 1,567,405 pounds of nitrogen, 313,377 pounds of phosphorus, and 280,160 tons of soil were prevented from reaching Virginia's waters.

Virginia Cooperative Extension (VCE)

The Virginia Cooperative Extension conducted a variety of non-point source educational and outreach programs for diverse audiences within the commonwealth.

With funding from The Cooperative State, Research, Education, and Extension Service at the US Department of Agriculture, VCE, in cooperation with the Extension Services in Maryland, Pennsylvania, West Virginia and Delaware, initiated a major project to greatly expand VCE's outreach and education programs that deal with environmental and water quality issues. The overall regional program will create a coordinated, science-based educational effort to support state and federal cooperative, incentive-based programs to reduce water quality impairments in the Mid-Atlantic region. The project will enhance and integrate the water quality programs of the five 1862 and four 1890 land grant universities in the Mid-Atlantic. Stronger, coordinated access for the USEPA and other federal and state agencies to the research, education and extension resources at regional land grant universities will be developed.

While this joint VCE/Virginia Tech project will concentrate on all environmental and water quality issues, it has four focus areas: public policy education, urban nutrient management, animal confinement/waste management, and nitrogen and phosphorus nutrient management. In conjunction with this effort, Virginia State University will develop a program that helps small and underserved farmers meet water quality objectives while maintaining profitability.

Again, this year, the popular "Mini-Grant" program, held in cooperation with DCR, funded over forty educational events across the commonwealth. Events were conducted mainly by VCE unit offices, soil and water conservation districts, DCR watershed offices, and the Natural Resource Conservation Service. These field days, workshops, on-farm demonstrations, and conservation tours reached over 5,000 homeowners, farmers, landowners, developers, and businessmen and women who make land management decisions. The purpose of the program is to promote "on-the-ground conservation" by highlighting simple and effective practices one can implement to protect water quality and prevent non-point source pollution. Some of the practices demonstrated included use of cover crops, buffer strips, manure management, grazing land protection, integrated pest management, turf and crop nutrient management, and stream protection.

As with many other programs, VCE faces challenges related to staff reductions and the loss of resources. Previously, there had been a full-time VCE position housed at DCR to help coordinate outreach and nonpoint source education efforts. At present this position is vacant.

National Resources Conservation Service (NRCS)

NRCS activities were concentrated on implementation of the Farm Bill. Many of the USDA programs that benefit non-point source pollution efforts were in a transition between the 1996 Farm Bill and the 2002 Farm Bill passed on May 13, 2002. Several of the existing programs benefited by increased funding that was authorized with the passage of the new legislation. Individual program accomplishments are as follows:

(a) Environmental Quality Incentive Program (EQIP)

Virginia received approximately 2.4 million dollars in FY 2002 funding for EQIP. Sixty-five per cent of these funds were

targeted to four priority areas for accelerated land treatment activities (conservation practices) to address water quality concerns. Funding for the areas was distributed based on proposals made to, and approved by, the state conservationist, in consultation with the State Technical Committee.

The following areas were approved and funded:

- Little River, in Tazewell & Russell Counties, $ 416,216
- S.F. Holston River (Phase 2), in Smyth & Washington Counties, $430,515
- Mayo River, in Patrick County, $270,340
- Back Creek, in Pulaski County, $140,024
- Nottoway River, in Sussex County, $360,235

The remaining monies were used to fund a state-wide sign-up for conservation practices, to address water quality degradation from cropland erosion, over grazed pasture situations, and improper animal waste storage and handling facilities.

With the passage of the new Farm Bill, an additional 2.6 million dollars of funding was received in the EQIP program for Virginia. This money was evenly divided among the animal waste and grazing concern applications that were on a waiting list. In total, EQIP obligated 5.1 million dollars for 267 contracts.

(b) Wildlife Habitat Incentive Program (WHIP)

Additional conservation work was accomplished under the WHIP program, directed at improving wildlife habitat. Fifty-five contracts, for a total of $263,000, were developed. Environmental benefits associated with this program include 893 acres of habitat for threatened and endangered species, 2,080 acres of upland habitat for birds and small game populations, 1.5 miles of stream corridor restoration and 4 acres of wetland development.

(c) Forestry Incentive Program (FIP)

Planting and managing Virginia woodland is a high priority for many landowners. Well-managed forest is a key component of proper watershed management and nonpoint source pollution efforts. Using available funds from current and prior year corrections, more than $532,000 was obligated to 366 contracts for tree planting, site preparation, and woodland management. Special emphasis was also placed on recruiting and enrolling 49 limited resource producers into the program. These individuals had not participated in any natural resource protection programs previously. This will be the last year for the FIP program, as the new Farm Bill combines FIP and other forest programs into the Forest Land Enhancement Program (FLEP), which will be administered by the Virginia Department of Forestry.

(d) Wetland Reserve Program (WRP)

NRCS manages the WRP as an easement program to restore and protect wetland areas previously drained or converted to other uses. Five WRP restoration areas were completed that restored 159 acres to wetland, and protected another 60 acres of associated natural wetland and riparian areas.

(e) Emergency Conservation Program (ECP)

The effects of a multi-year drought on Virginia agriculture have been quite severe. Utilizing funds available through the Farm Service Agency's ECP program, NRCS provided technical assistance to over 1,800 applicants for emergency assistance. Most of these requests involved emergency livestock water needs. Though not designed as a water quality program, these new sources of livestock water will reduce the producers' dependency on open streams as the only available water supply, thus, eliminating a great deal of direct access to streams for livestock.

Conservation Reserve Enhancement Program (CREP)

The Conservation Reserve Enhancement Program began taking applications on June 5th, 2000. The program objective is to improve water quality and wildlife habitat by offering financial incentives to agricultural

landowners. Funding support s the voluntary restoration of riparian buffers, native warm season grass filter strips and wetlands on 35,000 acres of environmentally-sensitive land within the Commonwealth of Virginia.

The following table provides a listing of all of Virginia's CREP goals:

Table 1. Virginia's CREP Goals

Virginia's CREP Goals						
	Enrollment Goals in Acres			Reduction Goals		
Basin	Enrolled	Restored Wetlands	Easement	Sediment	Nitrogen	Phosphorous
Chesapeake Bay	25,000	3,000 acres	6,000 acres	33,188 T. /yr.	516,873 lbs./yr.	66,953 lbs./yr.
Southern Rivers	10,000	1,500 acres	6,000 acres	19,481 T. /yr.	131,262 lbs./yr	31,648 lbs./yr.
Statewide	35,000	4,500 acres	8,000 acres	52,669 T. /yr.	648,135 lbs./yr	98,601 lbs./yr.

Development of this program required a unique conservation partnership of state, local and federal agencies, and private conservation groups. Partners include: the state departments of Conservation and Recreation (DCR), Forestry (DOF), Game and Inland Fisheries (DGIF), Chesapeake Bay Local Assistance Department (CBLAD), local soil and water conservation districts (SWCDs), Agricultural Extension, the USDA NRCS, and FSA, U.S. Fish and Wildlife Service, the Chesapeake Bay Foundation and Ducks Unlimited.

Cost-share assistance from the Virginia Department of Conservation and Recreation, USDA Farm Service Agency, and Chesapeake Bay Foundation and Ducks Unlimited are available to reimburse landowners for the restoration of riparian buffers and wetlands, which will reduce NPS pollution to local streams. The USDA Natural Resources Conservation Service provides technical assistance and planning. DCR is also offering a $500/acre incentive for CREP-enrolled acres placed under a permanent conservation easement. This program is expected to substantially reduce nitrogen, phosphorous, and sediment input to the Chesapeake Bay and watersheds in the Southern Rivers area.

Program signup, contract approval and project implementation are continuing throughout the CREP eligibility areas. Virginia's CREP enrollment period has been extended until December 30, 2007.

Pesticide Disposal Program

The disposal of canceled, banned or unwanted pesticides poses a significant challenge to agricultural producers and other pesticide users due to its high cost. The proper disposal of waste pesticides eliminates a potential threat to health and the environment.

The Virginia Department of Agriculture and Consumer Services (VDACS) conducted its 12th Pesticide Disposal Program, during 2002, in 35 southwest Virginia localities. The program is available to agricultural producers, pesticide dealers and pest control firms within selected localities, at no cost. Virginia localities are selected for participation primarily based upon the quantity of pesticide waste stored by potential participants.

A total of 31,998 pounds of unwanted, outdated and banned pesticides were collected for disposal from 81 agricultural producers, pesticide dealers and pest control firms. Some unknown materials were field-analyzed, while others had to be sent to the laboratory for analysis. Once identified, a specialized contractor properly disposed the materials.

The 2002 program completed the second round of collections throughout the state. It is currently undetermined whether the program will be continued in the future.

Information about this and other pesticide programs administered by VDACS may be found at: http://www.vdacs.state.va.us/pesticides/index.html.

Agricultural Stewardship Program

The Agricultural Stewardship Act (ASA, or Ag Stewardship) was enacted by the 1996 General Assembly. The formulation of this

innovative approach was the result of a joint effort by Virginia's

agricultural and environmental communities, the Virginia Association of Soil and Water Conservation Districts and state agencies to develop a common sense solution to water pollution problems caused by agricultural operations. The ASA addresses water pollution problems caused by nutrients, sediments and toxins entering state waters from agricultural activities.

The most recent annual report of the ASA program covers the period April 1, 2001 through March 31, 2002. This unusual reporting period was created by the fact that the program was not fully implemented until April 1, 1997. During the twelve-month period covered by the recent report, the Virginia Department of Agriculture and Consumer Services received more than 80 inquiries regarding possible agricultural pollution, of which 35 became official complaints. Twenty-three of the complaints involved both sediments and nutrients. Eight complaints were attributed to pollution problems involving nutrients, while four were related to sediments alone.

The commissioner's office, together with local soil and water conservation districts, in many cases, completed the investigation of 34 of the 35 official complaints received. Of those 34 complaints, investigations determined that 13 of the complaints revealed insufficient, or no evidence, of water pollution and were therefore unfounded. Four complaints were dismissed.

As part of the ASA program effort, VDACS conducted a training session on the Agricultural Stewardship Act during August 2001 for Soil and Water Conservation District directors and employees, and staff of Virginia Cooperative Extension, the Department of Environmental Quality and the Department of Conservation and Recreation.

Staff reductions and resource constraints represent a serious challenge for this program during the ensuing reporting period and beyond. Information about the Ag Stewardship Program may be found at: http://www.vdacs.state.va.us/stewardship/index.html.

Nutrient Management

DCR's Nutrient Management Program was established in 1989. The program's purpose is to encourage proper land application and efficient use of fertilizers, manures, sewage sludges and other nutrient sources utilized for agricultural and urban landscape purposes, in ways that protect and improve the quality of Virginia's ground and surface waters. DCR works closely with large and small agricultural operations to manage agricultural nutrients. DCR also educates urban landowners about the impacts of nutrient runoff from lawns, gardens, golf courses, parking lots, and other landscaped areas. DCR uses various strategies to encourage proper land application of fertilizer, manure, and sewage sludge for agricultural and horticultural purposes.

Nutrient Management Field Specialists

DCR's nutrient management specialists provide technical assistance to landowners. These specialists develop site-specific nutrient management plans (NMPs) with cooperating farmers, assist farmers with manure testing for nutrient levels, calibrate nutrient application equipment, and coordinate soil nitrate testing in agricultural crop fields. DCR's nutrient management specialists also assist localities in developing nutrient management programs and ordinances. The specialist developed 287 nutrient management plans covering 41,532 acres during the July 1, 2001 to June 30, 2002 period.

Nutrient Management Certification Program

DCR certifies private and public sector nutrient management planners, and conducts training sessions and examinations, as authorized in §10.1-104.2 of the Code of Virginia. As of August 2002, 254 people have become certified to develop nutrient management plans in Virginia. Planners represent fertilizer, seed, and pesticide suppliers, private consultants, employees of soil & water conservation districts, DCR, the Department of Environmental Quality, NRCS, and there are a few in miscellaneous categories as represented in the following table:

Table 2. Nutrient Management Certificates Issued

Categories	Number of Individuals
Fertilizer/Pesticide Industry	77
Private Consultants	41
DCR Employees	24
SWCDs	22
DEQ Employees	23
NRCS Employees	19
Extension Agents	16
Biosolids Industry	11
Academia	5
Misc. Individuals	16
Total Certified Persons	**254**

Funds to offset a portion of the fees charged by private planners are available through the Cost-share program. Non-DCR planners have reported 105,907 acres of plans during the last reporting period.

Manure Testing Program Documents Poultry Manure Phosphorus Reductions

Significant phosphorus reductions in poultry manures have been documented by data analysis of manure samples funded through the §319 grant. Virginia provided matching grants to poultry integrators to install Phytase injection equipment in feedmills during the 1997 through 1999 period. DCR used Water Quality Improvement Act state funds to provide $420,000, with industry matching funds of more than $600,000. Phytase is an enzyme that allows poultry flocks to more efficiently utilize phosphorus contained in animal feed ingredients, thereby allowing for reduced amounts of phosphorus in feeds. This source reduction activity is an innovative means to reduce phosphorus excreted in poultry litter. The result is significantly reduced phosphorus quantities to manage in land application. A comparison study of the average results for Virginia poultry litter samples for the period July 1, 1995 through June 30, 1995 (prior to Phytase equipment installations) and the period July 1, 2000 through June 30, 2001 (post Phytase equipment installation) indicate an 18.86 % reduction in elemental phosphorus per dry ton of poultry litter. This equates to a reduction of 2,862,298 pounds of elemental phosphorus generated by poultry in Virginia.

Development of Virginia Phosphorus Site Index

Version 1.0 of the Virginia phosphorus site index has been released. A computerized spreadsheet version of the index is available from the following web site: http://p-index.agecon.vt.edu. The index considers phosphorus soil test levels and runoff characteristics of fields. The index estimates phosphorus contributions to surface waters for phosphorus transported as particulate forms, dissolved orthophosphate, dissolved organic forms, and subsurface flow dissolved forms. The index has been incorporated into the Virginia NRCS 590 standard for nutrient management. DCR has been field testing Version 1.0 of the index during a part of this grant cycle and will continue the testing over the next year. Initial field implementation of the index has revealed that it is data intensive and time consuming for field staff. A two-year §319 grant has been awarded to a Virginia Tech team to calibrate the index to actual field conditions and evaluate ways to simplify data collection for the index. If the final EPA Combined Animal Feeding Operations (CAFO) regulations require phosphorus based nutrient management plans, Virginia will likely use either the phosphorus index or phosphorus threshold approach, or a combination of both these approaches identified in the proposed rule.

Poultry Waste Management Act Nutrient Management Plans

The Poultry Waste Management Act (HB 1207) was passed by the General Assembly and was signed by the governor in 1999. The regulations required poultry operations with at least 11,000 turkeys or 20,000 chickens to file a registration statement for the Poultry Waste VPA General Permit by October 1, 2001.

These operations must comply with a DCR-approved Nutrient Management Plan, which includes requirements for proper storage of poultry litter. A total of 1,086 nutrient management plans have been approved by DCR for the poultry permit. This represents essentially all known operations in the state projected to need the permit. The regulated operations produce 580,117 tons of manure annually. Of this total, 187,295 tons are land applied on the regulated operations on 125,831 acres, and 392,822 tons are sold to other farmers or used for alternative uses.

Poultry companies operating in Virginia were very progressive in prompting growers to have nutrient management plans developed and approved prior to the deadline. The law and regulations also require NMPs developed after October 1, 2001 to limit the application of phosphorus to crop nutrient needs or crop removal, whichever is greater. For most operations, this provision will take effect when their nutrient management plan is first revised, which must occur every three years.

Biosolids Fee Regulation

DCR staff participated in the development of a biosolids fee regulation, to be administered by the state Board of Health, that will reimburse counties for certain costs associated with monitoring and testing land applied sewage sludge. Approximately 50% of the biosolids that are land applied in Virginia originate from out-of-state sources. Localities have become increasingly concerned with sludge storage and land application practices. Some localities have hired sludge monitors to oversee

the land application activities. The reimbursement plan will allow for more counties to hire personnel to conduct monitoring and testing of the biosolids once they arrive in their area.

Forestry

Virginia Department of Forestry Riparian Initiative Update

Virginia's Riparian Initiative continues to have great success through a combination of strong state and federal agency cooperation and programmatic efforts. The third annual Governor's report lists the following accomplishments since its inception in 1996:

- The cumulative establishment of 448.9 buffer miles statewide, with 312.2 miles within the Chesapeake Bay watershed. This means Virginia is more than halfway to our bay agreement goal of 610 miles by the year 2010.
- Ongoing implementation of the Riparian Buffer Tax Credit
- Ongoing implementation of the Conservation Reserve Enhancement Program (CREP). Over 9000 acres have been enrolled in Virginia.
- Partnership in a five-year $1.3 million grant from the U.S. Forest Service for work in the Shenandoah-Potomac watershed
- Identification of buffer restoration opportunities on state-owned land, including 2 sites already signed-up on Department of Corrections lands
- Continuing effort to conduct research on buffer survival and positive in-stream effects of buffer plantings

The Virginia Riparian Working Group, formed in 1999 through Executive Order #48, continues to identify and guide the Riparian Initiative. Emphasis for the coming year includes increased plantings on state-owned property, document riparian easement locations, monitor nursery stock to supply increased plantings, and begin thinking of the CREP renewal process. Furthermore, agency staff working through the Riparian Working Group and Nonpoint Source Advisory Council will work to increase riparian restoration efforts in currently low implementation areas.

Construction & Development (Urban Program)

The Division of Soil and Water Conservation's Urban Program staff assisted localities, conservation districts, state and federal agencies, private developers and citizens to facilitate statewide compliance with the Virginia erosion and sediment control law and regulations and stormwater management law and regulations on regulated land development activities. During the past year, seven environmental engineers assigned to the field, within tidewater localities, provided services that include review of erosion and sediment control (ESC) and stormwater management plans, on site inspections, complaint response, enforcement support, and technical/regulatory training via the classroom and Internet. While the urban program's primary mandate is the oversight of state, federal, and utility projects, assistance is commonly provided to other entities, upon request, to enhance protection to property and natural resources.

During this period, urban program planners continued implementation of new procedures for conducting urban and environmental planning review of local ESC programs to improve program consistency across the state. Formal review of ESC programs was completed in eleven tidewater localities. Review of additional tidewater localities will be initiated during the next reporting period.

A major focus of the urban program staff's efforts continues to be educating government officials, private contractors, and consultants in the essential elements of ESC via classroom training and the new on-line "Responsible Land Disturber (RLD) Certificate of Competence" Program. Approximately 2,200 people completed classroom training and 3,500 people completed the RLD program during 2002. Urban programs staff are currently developing an *Online Inspector Recertification Program* to improve client service and to allow our limited staff resources to be re-directed to classroom

teaching for the new candidates for inspector certification.

Urban programs continues to produce technical bulletins on new technologies and current topics of importance for erosion and sediment control. Examples of some of our latest technical bulletins include "The Use of Poly-Acrilimides in Erosion and Sediment Control" and "Erosion and Sediment Control for Drought Conditions."

One urban programs compliance engineer has been successfully conducting field activities, i.e., complaint response and inspections, through the use of a portable computer notebook and a portable printer. This innovative approach has increased productivity approximately ten percent or more. Urban Programs is considering expanding this approach to an additional eight field staff to improve their efficiency as well.

Urban Programs- Stormwater Management (SWM) Technical Assistance in Tidewater Localities

Staff continues to assist localities in adopting stormwater management programs. A formal program review process that includes the review of the local erosion and sediment control (ESC) and SWM program continues to supplement this effort. When the ESC or SWM review identifies issues or deficiencies related to the lack of a SWM program, such as degraded stream channels or poor water quality, the resulting recommendations for improvement include the adoption of a comprehensive SWM program tailored to the specific issues identified.

During this period, urban program planners continued implementation of new procedures for conducting urban and environmental planning review of local SWM programs to improve program consistency across the state. Formal review of SWM programs was completed in nine tidewater localities. Review of additional tidewater localities will be initiated during the next reporting period.

Field engineers continued to respond to numerous requests for technical assistance from localities, consultants, citizens and soil and water conservation districts during this period. Staff also continued to participate in workshops throughout tidewater Virginia to provide an opportunity for attendees to learn about the latest stormwater techniques and guidelines, including *Better Site Design Techniques* and *Low Impact Development* practices. Staff also continues to fulfill the statutory mandate of reviewing, approving, and inspecting state agency construction projects for compliance with the ESC and SWM law and regulations.

Urban programs staff are assisting numerous government agencies to implement stream restoration and innovative stormwater management practices. Some of these practices include bioretention and low impact development. These projects are being used for educational purposes by displaying "government by good example." Urban programs continues to produce technical bulletins on new and innovative stormwater management practices such as the *Filterra* product.

Urban programs staff are currently developing an *Advanced Plan Reviewer Course*. This course will expand the knowledge gained in the *Basic Plan Reviewer Course*. The *Advanced Plan Reviewer Course* will cover innovative stormwater management practices such as low impact development for mitigation of both quantity and quality issues related to land development.

CBLAD NPS Pollution Management Program

The Chesapeake Bay Preservation Act was passed in 1988 because nonpoint source pollution related to the use and development of land was a growing concern in Virginia. The Chesapeake Bay Local Assistance Board and the Chesapeake Bay Local Assistance Department were created by the act and given authority and direction to develop water quality protection regulations for tidewater Virginia communities. The regulations provide criteria for designating sensitive lands and additional criteria for use by the localities in granting, denying or modifying requests to use and develop land within those designated "Chesapeake Bay Preservation Areas."

In addition to the ongoing functions of providing technical assistance and oversight, the board and department took several important steps to advance the goals of the Bay Act during the period from July 1, 2001 to June 30, 2002. The Bay Act regulations were revised, procedures for local compliance review were finalized, detailed implementation guidance was developed and case studies on impediments to better site design were completed. During this same period the program also encountered a number of significant challenges including

budget cuts, a proposal for merging the agency, and a legislative audit of local program implementation.

Compliance Review Procedures

The Chesapeake Bay Local Assistance Board has, during the reporting period, considered a set of policies and procedures for conducting compliance evaluations of local programs. Staff of the department will use the adopted policies and procedures to evaluate implementation of the Bay Act and regulations in each of the 84 local programs. The new initiative will include a set of checklists to be completed by both the local government program contacts and the department staff, and a series of field investigation reports that will be used to evaluate actual construction sites for consistency with the act and regulations.

The results of the field investigations will be combined with an analysis of the local program's constituent components (plan review processes, local ordinances and policies, and local program administration) to form an opinion of the program's consistency with the act and regulations. Based on these findings, the department will prepare a staff report to the board outlining strengths and weaknesses of the local program, with recommendations for improvement and a time-table for implementation of the recommended programmatic changes.

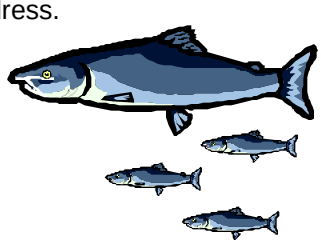
"Better Site Design" Case Studies

The Department advanced its *Better Site Design* initiative by analyzing impediments to the use of the better site design principles through two local government case studies. The concept of better site design was developed through a national site planning roundtable and includes a set of principles for reducing the adverse affects of land development on water quality. The department had previously published a document entitled *Better Site Design: An Assessment of the Better Site Design Principles for Communities Implementing Virginia's Chesapeake Bay Preservation Act.* This document was designed to help localities meet the Bay Act's requirements for minimizing impervious cover and land disturbance and preserving vegetation. During the outreach phase of this earlier project, however, many developers and local officials noted a number of impediments to the use of these principles. As a result, the department expanded the project to gain a better understanding of these impediments through local case studies. The case studies were conducted, with grant assistance from the Virginia Coastal Resources Management Program at the Department of Environmental Quality, by staff of the Center for Watershed Protection, and consisted of analysis of local ordinances and interviews with local planners and developers in James City and Richmond Counties.

Results of the case studies indicated several common barriers to better site design, including developers' fears of testing new designs, vague language in local codes, conflicting information between written regulations and actual practices, lack of awareness about the benefits of using the better site design principles, and excessive standards and permitting requirements. Details of the case studies, their individual findings and recommendations for removing identified impediments are included in a final report entitled *Virginia Better Site Design Case Studies: James City County and Richmond County*.

Shoreland Planning Project

The Department has begun a *Shoreland Planning* initiative with the assistance of a Coastal Program grant through the Department of Conservation and Recreation. Through this project the department is seeking to give localities a better tool for evaluating the effects of waterfront development on local water quality and living resources. While many planning initiatives focus on protecting the Bay in general, the Shoreland Planning Project seeks to localize environmental management by concentrating on the coastal shorelines and embayments that are most directly affected by new development. By using the project's land suitability index, localities will be better able to predict impacts given their coastal resources and current land management programs, and identify the changes to those programs necessary to protect their local waters. The project should also help waterfront localities meet some of the comprehensive plan requirements of the Bay Act regulations that have, in the past, been difficult to address.



Chesapeake Bay Program

Department staff have been intricately involved in the various activities of the interstate Chesapeake Bay Program. The department has been asked to play a significant role in these efforts because of our expertise in land use planning and management and in the area of nonpoint source pollution control.

Staff are currently participating with other state agency staff and

with the Bay Program to develop recommendations and strategies for working with local governments and others to implement the commitments of the Chesapeake 2000 Agreement (C2K). A department staff member serves as the Virginia inter-agency team leader for the Development, Redevelopment and Revitalization Work Group. Coordination among agencies within the state is accomplished through many inter-agency bodies such as the Virginia Chesapeake Bay Interagency Workgroup, Nonpoint Source Advisory Committee, the Watershed Planning and Permitting Coordination Task Force, the VDOT interagency project review committee, and the Coastal Policy Team. Some of the C2K commitments directly address goals and policies already incorporated into the Chesapeake Bay Preservation Act and regulations. Others require additional resources or programmatic expansions to accomplish them. CBLAD staff was the principal author of *Section 4.2, Development, Redevelopment and Revitalization, of the Secretary of Natural Resources Annual Report on Virginia's Efforts to Meet the C2K Commitments*.

Challenges for CBLAD

The Chesapeake Bay Local Assistance Department also faces significant challenges as a result of the state's financial difficulties. In late March, the 2002 General Assembly cut $1,000,000 from the department's budget in the line item for financial assistance to localities – the local government competitive grants and the agricultural conservation grants. The department was, therefore, able to fund only two projects from the $40,462 remaining. In response to the General Assembly's action, in late April 2002, Coastal Program staff at DEQ, DCR, and CBLAD began working together on a funding package that would assist selected tidewater localities with implementation of the Bay Act. Since many of the coastal land management activities supported by the Bay Act also assist in implementation of the Coastal Nonpoint program, Section 6217 was considered as a source of funding for these projects. However, this Coastal grant funding is a one-time opportunity and will not be available for this purpose in the future.

The department has also lost staff positions and functions as a result of the state's budget problems. Positions for the Polecat Creek Monitoring project, Education and Outreach, and Geographic Information Systems have been eliminated and several liaison and engineering positions remain unfilled.

The Joint Legislative Audit and Review Commission (JLARC) conducted a study of the Department during the reporting period. House *Joint Resolution 622 (2001)* directed JLARC to assess the progress that has been made, to date, in implementing and enforcing the Chesapeake Bay Preservation Act Program. The study mandate required that JLARC assess the Chesapeake Bay Local Assistance Board's (CBLAB's) and department's (CBLAD's) oversight and enforcement practices concerning local compliance with the act. The mandate also required an evaluation of the implementation and enforcement of the local Bay Act programs, and an assessment of the current resources necessary at the state and local level for implementation and enforcement of the Bay Act.

This report was generally positive regarding the importance of, and need for, the Bay Act program and the quality of assistance provided by CBLAD staff to their local government partners in tidewater Virginia. The few criticisms in the report were tempered by recognition of a number of mitigating circumstances in the program, including (1) the general complexity of the program, aimed at local land use codes, which are, in themselves, complex; (2) the lack of basic structure among many of the smaller and more rural localities at the program's onset; (3) limited state agency staffing and resources, necessitating difficult prioritization among competing program objectives; and (4) a protracted regulation amendment process, just completed in December 2001, five-and-a-half years after its initiation.

Urban Nutrient Management

Major urban nutrient management activities during the reporting period included development of an urban nutrient management strategic plan. The urban nutrient management strategic plan includes 17 implementation strategies to effectively reduce nutrient loss from developed lands. Managed lands are subdivided into categories of: (1) professionally managed lands, (2) homeowner maintained lands, (3) golf courses and athletic fields, and (4) stormwater management areas. Professionally managed land operators are influenced through the development of voluntary water quality agreements with participating lawn service companies that agree to operate under a DCR approved nutrient management plan. Homeowner maintained land nutrient practices are improved through DCR brochures distributed by cooperating fertilizer supply retailers, efforts to strengthen

fertilizer labeling requirements to include use directions with proper rates and timing of fertilizer application, development of materials for distribution through homeowner associations, and encouraging extension master gardener programs. Golf course superintendents will receive a mailing of the *Golfing Green Virginia, 18 Golf Course BMPs* document. DCR nutrient management staff will also assist golf course superintendents in developing golf course nutrient management plans.

The development and presentation of the "Golfing Green Virginia, 18 Golf Course BMPs" publication and workshop was held as part of the *Environment Virginia 2002* conference in Lexington, Virginia on April 9, 10, and 11, 2002. The workshop included a tour of a golf course including signage addressing 18 different BMPs. The publication can be viewed at the following web site: www.environmentva.org/GolfGreenVA.htm

Monitoring & Tracking

Virginia Citizen Water Quality Monitoring Program

DCR coordinated with DEQ, Virginia Save Our Streams and the Alliance for the Chesapeake Bay to sign a revised Letter of Agreement to cooperatively implement the Virginia Citizen Water Quality Monitoring Program. This foundational document brings two state agencies and two citizen monitoring organizations together to actively promote and support citizen efforts to address local water quality issues. As a program partner, DCR provided leadership and administrative support to organize the annual Citizens for Water Quality Summit, which provided assistance and information to over 30 citizen monitoring organizations. DCR assisted in the development and review of citizen monitoring proposals under the DEQ Citizen Monitoring Grant Program and assisted in the coordination of citizen monitoring councils throughout Virginia. In conjunction with DEQ, DCR leveraged National Oceanic and Atmospheric Administration (NOAA) funding to help support citizen monitoring efforts and development of improved citizen-appropriate monitoring protocols. Altogether, approximately 1000 volunteers have been introduced to nonpoint source pollution management issues or provided direct support for monitoring activities through DCR efforts.

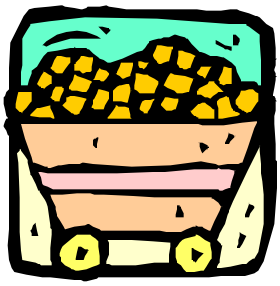
To further support citizen monitoring in Virginia, DCR served on the Virginia Water Monitoring Council (VWMC) Steering Committee and chaired the committee assessing needs in the monitoring community. DCR oversaw the development of VWMC brochure. Finally, DCR spoke at several conferences to promote the VWMC and the Virginia Citizen Water Quality Monitoring Program.

Virginia Adopt-A-Stream Program

During this period, DCR continued to improve effectiveness of the Virginia Adopt-A-Stream Program (VAASP) outreach through implementation of a new e-mail address and web links. Materials describing watersheds and the issues surrounding NPS pollution were provided to all program participants and each DCR watershed office was equipped with VAASP promotional materials. Of particular importance, was the development and introduction of Spanish-language storm drain stencils. As the centerpiece of DCR's exhibit at the 2001 Boy Scouts of America Jamboree, the VAASP served as a model for hands-on, locally based, watershed stewardship activities.

Approximately 5,000 VAASP volunteers accomplished the following activities during this period:

- There were 37 new waterway adoptions, totaling over 60 shoreline miles in length.
- There were 122 cleanup events, enhancing over 275 shoreline miles.
- There were 11 stormdrain stenciling events, stenciling an estimated 200 stormdrains.
- Over 500 improperly disposed white goods were collected through 2 white goods collection events.



Resource Extraction

Virginia Department of Mines, Minerals, and Energy: Divisions of Mineral Mining (DMM)

The DMM Orphaned Lands Program has three primary functions:

1) inspection and survey of abandoned mineral mine sites
2) design of reclamation plans for abandoned mine sites, and
3) administration of contracts, under Virginia procurement law, to construct the reclamation designs.

Since 1981, DMM has completed the reclamation of 598 acres of disturbed land at 77 abandoned mine sites in Virginia. The total value of contracts bid for orphaned mineral mine reclamation is $2,773,160.34, through 2002. There are approximately 3000 abandoned mineral mine sites in Virginia and DMM has completed inventories on 627. The sites occur in all geographic provinces and some sites were mined prior to the Revolutionary War.

The Virginia Water Quality Improvement Fund (WQIF) and Section 319 funds from the federal Clean Water Act (CWA) help support the work of the Orphaned Land Program. In 2002, a Section 319 grant to DMM supported the nonpoint source coordinator position and funded the completion of inventory in hydrologic units B02, B52, E05 and E14. Furthermore, the Virginia Department of Mines, Minerals and Energy has supported the NPS abatement efforts of the Department of Conservation and Recreation, by providing financial support for universities to complete additional inventory of abandoned mine sites in the following hydrologic units: B10, B11, B12, B14, B32, F02, G01, G06, H18, H34, I10, I10, L42, L43, L46, L50, N13, N14, N19, N20 and N21.

The NPS coordinator position also completed management of the Valzinco Mine Reclamation Contract in hydrologic unit F09 of the York River basin. This watershed is impaired from the development of acid mine drainage at various mines occurring along the banks of the watershed channel. The Valzinco Mine occurs in the headwater area and contributes heavy metals to the water column from acidification of mine spoils in a geologic environment void of alkalinity and pH buffering capacity. The project cost of $228,750.00 was partially funded by a separate 319-NPS grant, through DCR, for $90,000.00, with the balance ($138,750.00) coming from Orphaned Land Funds. This enabled work to begin on the restoration of Knights Branch in Hydrologic Unit F09 (Northeast Creek-N. Anna River). The project created approximately four acres of new wetlands (see **Figures 1. & 2.**) in Virginia's piedmont province. Initial testing, following construction, indicates the project is already reducing metal loads in the water column, as shown below. Hydrologic conditions in July 1999 (drought) and July 2000 (dry) were similar to June 2002 (drought) see **Table 3.**

Table 3. Hydrologic Conditions in Knight's Branch

	Pre-reclamation 7/99		**Pre-reclamation 7/00**		**Post-reclamation 6/02**	
Analyte	*Valz flow*	*1-mi dnstr*	*Valz flow*	*1-mi dnstr*	*Valz flow*	*1-mi dnstr*
pH	2.9	2.4	3.22	2.88	3.2	3.8
Cond (uS)	1225	1540	363	605	612	120.6
SO4 (mg/l)	1400	1700	98	170	210	30
Al (mg/l)	19.47	31.15	1.4	3.6	3.6	0.31
Cd (ug/l)	88	99	10	14	3.8	0.57
Cu (ug/l)	2200	2800	160	380	51	19
Fe (mg/l)	69.7	106	18	22	3.3	0.81
Pb (ug/l)	1300	1600	310	510	500	66
Zn (mg/l)	27	27	5.6	8.1	5	0.54

Figure 1. Pre-reclamation of Knight's Branch

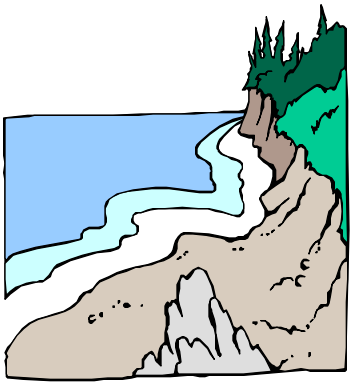
Figure 2. Post-reclamation of Knight's Branch

A second grant under the Virginia WQIF was secured through the partnership of DMME and Spotsylvania County to continue work in Knights Branch. This grant enables DMM to begin reclamation of the Mitchell Mine – approximately one mile downstream of the Valzinco Mine in Knights Branch. The NPS coordinator has begun the reclamation design for Knights Branch and the Mitchell Mine. Initial sampling indicates mercury and methyl-mercury are present in the water column around the mine site and in the stream. Initial reclamation will begin below Valzinco in Knights Branch, ahead of Mitchell, to reclaim fluvial remnants of Valzinco spoils and further reduce acid mine drainage.

Future funding requirements are projected as follows: Year 2003 NPS coordinator position funding (319 funds) ~ $75,000.00. If additional funding were available, the significant progress in orphaned land inventory made during 2002 could continue. The addition of university students has accelerated the rate of inventory and is extremely cost-efficient. However, recent proposals for funding the universities have been denied. For additional information, contact the NPS coordinator at DMME/DMM, Robert G. Sobeck, Jr., (434) 951 6318, or, e-mail: rgs@mme.state.va.us.

Division of Mined Land Reclamation (DMLR)

DMLR secured 319 grants through DCR for reclamation work in the coal region of Virginia. Specifically, $57,000.00 in funding for the Bull Creek Stream Improvement Project in Buchanan County has resulted in work along approximately 5600 feet of stream. Historically, the site was impacted by coal mining, and is currently listed as impaired in the Virginia Department of Environmental Quality's 303(d) report. DMLR is continuing to pursue 319 grant support for inventory of abandoned mined lands in watersheds that are listed as impaired by DEQ. DMLR already maintains an inventory of abandoned mined lands (AML) in the state's coalfields. Due to federal requirements attached to the funding that supports the AML inventory, the state's inventory must focus its information-gathering and assessment on the abandoned coal mines that pose a danger to public health and safety, and the inventory must rank sites that create only an environmental problem as lower priority (Priority 3) on its list of sites to be reclaimed. In the impaired watersheds of the coalfields scheduled for TMDLs, an enhanced inventory of the AML sites that are causing environmental problems – particularly nonpoint pollution problems - is greatly needed, but such an inventory will require alternative funding and resource support from grants, such as DCR's 319 program, and from other watershed partners. For additional information on DMLR NPS work contact Joey O'Quinn, (540) 523-8271, or e-mail: gjo@mme.state.va.us.



Hydromodification

Issues relating to instream and riparian habitat, channel stability, aquatic resources, and watershed planning have received increased interest and are developing as focal points for environmental action. The use of coastal nonpoint program funds has provided an opportunity to accomplish several of the activities outlined in the Hydromodification Chapter of the 1999 Nonpoint Source Pollution Management Program document. The primary purpose of the Hydromodification Chapter objectives is to improve the design standards, specifications, and implementation of best management practices for stream restoration activities. This includes establishing a work group, developing an in-field stream classification system, and establishing in-stream flows, reference reaches, and technical standards. During this reporting period, two projects were completed that support implementation of several of the action items in the Hydromodification Chapter. These projects received $82,957, in funding from the National Oceanic and Atmospheric Administration, and leveraged $45,890, in match funds, for a total of $128,847.

Project 1: Identification and Analysis of Habitat Impairment Associated with Hydromodification and Nonpoint Source Pollution Phase 2- Channelization

This was a follow-up project to evaluate the impacts to instream and riparian habitat from stream channelization activities. Objectives for Phase II were:

- Develop a process for the quantitative evaluation of potential habitat degradation associated with channelization and other hydromodifications,
- Present recommendations on how to identify problems and potential opportunities for improvement of habitat.

Forty-four sites were examined and stream habitat characteristics of a statistically valid number of tributaries were measured in the coastal area of Virginia. The statistical approach of the study was designed to:

- Identify degradation of habitat due to hydromodification
- Compare variables with like systems under reference conditions.

Results of the Canonical Correspondence Analysis do not show a clear separation of experimental and reference sites across the first two canonical axes for either channelized or dredging operations. However, channelized streams and small dredged streams of the coastal zone do exhibit degraded conditions when compared to reference conditions. These differences are reflected in the overall habitat evaluation scores (higher scores in reference conditions), but, individually, in few parameters. This study presents opportunities for restoration of instream habitats (specifically substrate and epifaunal cover) and riparian habitats (to aid restoration of reduced canopies). A copy of the report can be found under the 1999 grant cycle list of projects at http://www.dcr.state.va.us/sw/czreauth.htm.

Project 2: Pilot Study to develop technical standards and procedures for stream reference reach establishment in Virginia's Coastal Zone

In conjunction with Virginia Commonwealth University (VCU), Center for Environmental Studies, DCR recently completed a phase 1 project to develop a multi-metric approach to developing small-scale reference reaches. Relying on the generally accepted evaluation techniques of Rosgen, Index for Biotic Integrity, Rapid Habitat Assessment Protocol, and the Rapid Bioassessment Protocol, a single evaluation approach was developed. One result has been the addition of aquatic resource information into the NPS watershed assessment report generated by DCR. This report shows NPS loadings on a sub-watershed scale. This information is represented in a prioritization scheme that allows state agencies to target funding into areas with the greatest NPS pollution impacts. Information on rare, threatened, and endangered species also is included in the report. This information will allow agencies to protect those resources through anti-degradation or pollution prevention policies.

A phase 2 project is currently under development that will greatly

expand the number of stream segments to be evaluated and increases the geographic coverage. It is anticipated that other funding sources will be identified to apply this effort statewide. An interagency "stream team" is being utilized to help direct DCR with this effort. The stream team is a partnership of 30 members representing seven state agencies, four federal agencies, two environmental organizations, two academic institutions and one private firm. The representatives on the stream team encompass 23 different programs. A copy of the report can be found under the 2000 grant cycle list of projects at http://www.dcr.state.va.us/sw/czreauth.htm.

Areas of Concern for Hydromodification

Key pieces of this overall effort are the collection of needed information on stream flow, streambank stability, and instream and riparian habitat conditions. While Virginia continues to make progress on accomplishing the action items in the Hydromodification Chapter, the recent budget crises limits our ability to provide technical expertise and support to local governments.

Future Actions for Hydromodification

Virginia has just begun to conduct a more extensive reference reach development project. This project expands upon the phase I project by evaluating approximately 60 additional stream segments over a broader geographic area. A hydrologic modification handbook is also being developed that will describe a limited number of best management practices regarding stream impacts. Training courses to deliver the practices described in the handbook will be held in two or three locations for practicing professionals within the coastal zone. Longer-term prospects include expanding this effort to the remaining areas of the state and to begin working with local governments on the use of the reference reach model tool. All of these projects support implementation of action items presented in the *1999 Nonpoint Source Pollution Management Program* document.

Grants & Technical Assistance

Building Capabilities Of Virginia's Conservation Partner Agencies And Organizations

(a) Introduction & Background

Virginia has established a mix of regulatory and voluntary approaches that aim to control a changing blend of NPS pollution. Virginia tends to favor, and place greatest reliance on, the voluntary actions of its citizens, to minimize land disturbing actions that contribute NPS pollution to state waters. Voluntary approaches mean that citizens become informed about NPS pollution through education, and are persuaded and/or motivated to carry out best management practices. Some individuals are motivated by monetary incentives (tax credits, cost sharing assistance, low interest loans, etc.), others may be motivated to preserve natural resources they manage and minimize NPS pollution for the sake of the environment.

The "ambassadors" of the conservation message are largely the staff of government agencies and organizations. These professional conservationists most directly interact with farmers, contractors, homeowners and others. They include staff of DCR (such as nutrient management specialists, urban program engineers and others), the USDA NRCS, Soil and Water Conservation Districts, Virginia Cooperative Extension, and others. The effectiveness of these individuals and their success with educating and persuading property owners and managers can have a tremendous impact on the success of Virginia's voluntary programs and approaches.

Professional staff are more effective "selling" conservation, and reducing NPS pollution, when they are provided appropriate training and development opportunities. To effectively train and develop staff capabilities, representatives from these conservation partners agencies have established four regional, and one central "oversight" team. The teams are increasingly becoming known as "JED" teams –the acronym for Joint Employee Development.

(b) Overview of Action

DCR established a partnership of teams that coordinate training and development initiatives. The partnership recognizes the importance of maintaining skilled staff, who are critical to achieving NPS reduction commitments in the Chesapeake Bay watershed, with TMDL implementation and obligations relating to impaired waters.

The JED teams resolved to provide 3 "core" courses for the benefit of agency staff, annually. They are:

- *Conservation Orientation for New Employees*: Designed as a week-long course to introduce new staff to the fundamentals about agencies, programs, roles, commitments, etc.
- *Effective Presentation & Instruction*: Approximately a week-long course that provides instruction and guidance pertaining to effectively delivering a presentation to an audience. Individuals are critiqued by their peers, following their delivery of a series of progressively longer presentations. In addition, use of visual aids and supporting materials is discussed.
- *Conservation Selling Skills*: This two-day course explores methods of effectively identifying conservation needs of farmers and other non-governmental constituents. Participants are exposed to the personality differences of individuals and provided with techniques to match information with a client's interests and needs.

Beyond these 3 fundamental courses, partner agencies are also dedicated to developing capabilities of the elected and appointed officials that serve as directors on the boards of Virginia's 47 SWCDs. These directors, numbering over 300, serve their communities without pay. They set the policy and direction of grassroots conservation organizations. The partner agencies deliver regional orientation programs for directors who are newly elected or appointed. Generally three, identical orientation programs are offered, on a regional basis, to provide a convenient opportunity for officials to receive training.

(c) Accomplishments During The Reporting Period

- The curriculum for the *Conservation Orientation for New Employees* received an extensive overhaul with considerable contributions from partner agency staff. The revised program will be piloted during late summer, 2002.
- Two teams of professionally trained staff carried out two sessions of the *Effective Presentation and Instruction* (EP&I) course during June, 2002. One session was conducted in western Virginia, with participants that represented all partner agencies. The other session was held in central Virginia. Combined attendance exceeded 20 individuals.

During November, 2001, a professional trainer, on contract with DCR, delivered a two-day fundamentals of *Conservation Selling Skills* course. Approximately 30 agency staff members attended. Since these individuals hold supervisory positions, predominantly, nearly all returned two weeks later for a one-day "coaching" short-course. The intent of the coaching course is to enable supervisors to enhance the capabilities of their staff. The EP&I and selling skills courses were chiefly evaluated as "very good" and "outstanding."

Additionally, 3 orientation programs were delivered around the Commonwealth of Virginia to benefit newly elected or appointed SWCD directors. Combined attendance at the 3 sessions exceeded 100 individuals, which, in addition to new directors, included new staff and others that wished to receive a refresher on the course information.

Ground Water Festivals

The Virginia Department of Environmental Quality, in cooperation with US EPA Region III, National Project W.E.T. and Nestle Waters North America, hosted ground water festivals on Thursday, September 19 in Dickenson County and on Friday, September 27 in Northumberland County. Sixth grade students from these two counties attended sessions on the occurrence of ground water in their region, the importance of ground water, and activities they can adopt to protect ground water and other natural resources. For additional information, contact Mary Ann Massie at DEQ, (804) 698-4042.

Coastal Programs

DCR Chesapeake Bay Grant Program

This year DCR awarded $400,000 to local governments, non-profit organizations and conservation districts, for projects that improve local land-use planning and management for nonpoint source

pollution prevention, in support of Virginia's commitments in the Chesapeake 2000 Bay Agreement. The funding for this Chesapeake Bay Watershed Grants program is available through the Chesapeake Bay Implementation Grant 2002. This program supports objectives of the agreement relating to:

- 2.2 Watersheds
- 4.1 Land Conservation
- 4.2 Development, Redevelopment, and Revitalization
- 5.2 Community Engagement

Through a highly competitive request for proposals process, a total of sixty proposals were received, seeking over $1.7 million in funds. The seventeen projects offered funding awards include demonstration sites, ranging from low impact development practices, impervious surface retrofits, and green roofs. In addition, the projects support ten stream restoration initiatives, nine bioretention facilities, two conservation easement programs, development and implementation of five watershed management plans, and a pollution prevention program for the media.

The three innovative green roof demonstration projects are notable for their intended benefits to reduce the strain on stormwater systems, and for the natural processing of pollutants from rainwater and the atmosphere. A green roof can be defined as a lightweight, rooftop system consisting of waterproofing, drainage medium, growing medium, and drought-tolerant vegetation. The green roof demonstration sites include a 3,285 square foot green roof on a highly visible county office building, a 4,700 square foot green roof in a residential complex, and a shed at a community garden.

A county-sponsored low impact development (LID) project will work with a developer to modify site designs to incorporate LID practices and will include the construction phase. The county, and others throughout the state, will use the site to determine impediments to LID practices, and, as a demonstration tool to educate other developers on LID. Additional information on the projects funded through the DCR Chesapeake Bay Grants Program is available on the DCR Grants web page www.dcr.state.va.us/sw/grants.

Virginia Coastal Program

The Coastal Zone Management Act of 1972 established a federal-state partnership program to protect the nation's coastal resources. The Virginia Coastal Program was fully approved by the National Oceanic and Atmospheric Administration in 1986, making the Commonwealth of Virginia eligible for federal funding for coastal resource protection. Every four years, Virginia's governor issues an executive order to continue the Virginia Coastal Program. On June 26, 2002 Governor Mark Warner signed *Executive Order Twenty-three,* continuing the Virginia Coastal Program through June 2006. This executive order defines the goals of the Virginia Coastal Program and names the Department of Environmental Quality (DEQ) as the lead agency for the program.

The Virginia Coastal Program Office, at DEQ, coordinates projects and programs with our partner resource agencies, focusing on nine core areas: wetlands management, subaqueous lands management, dunes management, coastal lands management, nonpoint source water pollution control, point source water pollution control, point source air pollution control, fisheries management and shoreline sanitation.

The Virginia Coastal Program receives funding through Section 6217 of the CZMA for nonpoint source pollution control. These funds provide full support for the Virginia Coastal Nonpoint Program, which is administered by the Virginia Department of Conservation and Recreation. Funding also supports several nonpoint source pollution related projects at the Chesapeake Bay Local Assistance Department. The Coastal Nonpoint Program and CBLAD projects are discussed in further detail elsewhere in this report.

The Virginia Coastal Program is also involved in a variety of planning and enforcement projects that improve the commonwealth's ability to manage nonpoint source pollution and support several of the Nonpoint Source Pollution Management Program's goals. These projects are discussed below.

Special Area Management Plans

The Virginia Coastal Program supported two Special Area Management Plans (SAMPs), during the past year. Each of these regional-planning projects is rooted

in the principle *to coordinate multilevel planning efforts for the protection of significant natural resources through development and implementation of enforceable policies*. NOAA provides match-free funding for the development of these SAMPs.

The Southern Watersheds SAMP was created in 1995 to find a balance between the economic and residential development needs of the cities of Virginia Beach and Chesapeake, and the protection of open-space and natural resources. In the last year, a Multiple Benefits Conservation Plan (MBCP) was developed to reduce fragmentation of the region's wetlands and vegetated buffers. Six state and three federal agencies, a Non-governmental organization (NGO), the two cities, and the Hampton Roads Planning District Commission have signed an MOA for the plan, and have begun implementation. The purpose of the plan is to preserve a set of riparian-based conservation corridors that will provide multiple benefits (i.e., water quality protection, habitat enhancement and recreational opportunities) when used for compensation sites. Protection of the riparian corridor system is an important component in water quality protection in this intensely developed area.

The Dragon Run SAMP's mission is to support and promote community-based efforts to preserve the cultural, historic, and natural character of the Dragon Run, while preserving property rights and the traditional uses within the watershed. The Dragon Run is a forty-mile fresh and brackish water stream which runs through Essex, Gloucester, King and Queen and Middlesex Counties, encompassing 140 square miles of primarily agriculture and forestry lands. The SAMP, initiated in 2001, is focusing on the preservation of the intact buffer system and prevention of significant land conversion within the watershed. The existing buffer system and land-use provides significant water quality protection.

For more information on the Virginia Coastal Program and supported projects, please visit our website at http://www.deq.state.va.us/coastal.

Coastal Nonpoint Source Pollution Control Program

Development and implementation of the coastal nonpoint source pollution control program (coastal nonpoint program) is required by Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990. States are required to implement 56 “management measures” within six resource categories. Virginia submitted its program document in 1995 and received conditional approval in 1998. Subsequently, Virginia focused its efforts on meeting the program conditions and received full federal approval of the program in May 2001. Due to these efforts, many of the action items in the Coastal chapter of the *1999 Nonpoint Source Pollution Management Program* document have been completed. The 2001 grant cycle received an increase in program funding. With the increased funding and full program approval, Virginia was better positioned to focus its efforts on a few key areas. During this reporting period, projects within three resource categories were completed. These projects received $232,639 in funding from the National Oceanic and Atmospheric Administration and leveraged $71,115 in match funds for a total of $303,754.

Coastal Agriculture

Plasticulture

One element of the coastal nonpoint program is the development of “additional management measures” for issues beyond the initial scope of the program guidance or where water quality is not maintained after implementing appropriate pollution controls. In this instance, Virginia recognized the need to provide a technical resource guide to the agricultural community pertaining to the use of plastic mulch in their operations. A technical advisory committee and a growers advisory committee were established to assist in the effort. The partnership included 25 growers throughout the coastal zone, three soil and water conservation districts, one federal agency, two industry representatives, two state agencies, and an academic institution.

The guidebook presents information on pollutants and control measures and describes the effectiveness of many best management practices. This is followed by a chapter that describes, in detail, how a grower can develop a water quality protection plan. The last chapter in the guidebook provides three example water quality protection plans for different geographic areas. The guidebook also provides information on financial programs, websites, and agency contacts. The guidebook is being

provided to extension agents, soil and water conservation districts, state and federal agencies and the advisory committee participants. The guidebook can be found at http://www.ext.vt.edu/pubs/waterquality/442-756/442-756.html.

Coastal Urban

Stormwater Management

We concluded a project with Stafford County to update their stormwater ordinance and stormwater design manual. The primary purpose of this project was to support the revision of these documents to incorporate low impact development and design concepts. The county also wanted to update their ordinance and manual to reflect certain changes in the state stormwater management law. This will allow the county to more effectively address stormwater runoff in their community while taking steps to minimize impacts to sensitive areas, reduce the impacts from installing infrastructure, and promote more effective land use decisions.

Virginia also completed the development of a model stormwater ordinance and an economic study of the benefits of project development when best management practices are incorporated. The economic study developed an economic assessment of benefits associated with different watershed protection strategies. There has long been an intuitive understanding of the economic value of protecting the environment for future generations. Current development patterns suggest, however, that the economic value of each small development decision is less understood. This project was aimed at establishing an economic basis (or incentive) for the decision makers associated with each individual development project. The technical paper "Economic Benefits of Protecting Virginia's Streams, Lakes and Wetlands" provides a broad overview of the economics of environmental stewardship, and the follow up paper titled "The economic Benefits of Better Site Design in Virginia" provides an actual cost assessment of environmental development strategies compared to the more traditional development standards. The final report and model ordinance can be found at the bottom of the web page at http://www.dcr.state.va.us/sw/stormwat.htm#pubs.

Marinas and Recreational Boating

(a) Virginia Clean Marina Program

This program was launched in January 2001, after 15 months of preparatory work to develop a guidebook, establish the Marina Technical and Environmental Advisory Committee (MTEAC), and develop fact sheets and program information folders. MTEAC is a partnership of 18 members, representing five state agencies, one environmental group, the U.S. Coast Guard Auxiliary, four marinas, two citizens, two trade industry organizations, and an academic institution. The program is designed to work directly with marinas to develop onsite approaches to pollution prevention. The program also conducts outreach by hosting workshops, attending boat shows, and using the Internet and a newsletter to advertise. In support of the outreach effort, 10,000 bumper stickers and 10,000 boater tip cards were printed. These will be provided to marinas, bait shops, and retail stores along with a countertop display stand.

During this period there were 96 marina site visits. Due to the process of pledging and meeting the minimum criteria, there are multiple site visits per marina. Manning a booth at four boat shows, attending four meetings with various groups, and hosting four workshops resulted in promoting the program to thousands of people. To date, there are 11 marinas that have met the minimum criteria and are designated as a "Virginia Clean Marina" and 18 additional marinas that have pledged to take the necessary pollution prevention steps to achieve designation. Information is available at http://www.vims.edu/adv/vamarina/clean.html and http://www.deq.state.va.us/vacleanmarina/.

(b) Marina Siting Suitability Tool

A marina siting suitability "modeling" effort designed to assist local governments in planning for near-shore development was recently completed. This information will be provided directly to localities on CD-ROM and be Internet accessible. The Virginia Marine Resource Commission has responsibility for the siting of marinas and placement moorings, Criteria is based on a series of environmental issues that includes water depth and quality, wetlands, SAV, shellfish grounds, proximity to natural channel, and threatened or endangered species. The purpose of this project was to develop a model that visually represents the criteria. Using GIS, streams and shorelines are mapped in segments that are 600 linear meters, 30 meters landward, and 200 meters into the water. Used in conjunction with other data, such as, roads, existing land-use, zoning, and infrastructure, local governments will be better positioned to make decisions regarding near shore development. Information can be found at http://www.vims.edu/ccrm/cci.html

(c) Programmatic Activities

Efforts relating to clean marina programs continue to be extensive at all levels. Virginia has promoted the development of clean marina programs regionally and nationally with some success. At the regional level, Virginia has continued to work with Maryland, the National Park Service in Washington, D.C., and Delaware to coordinate our respective programs. This regional cooperation recently developed and submitted a white paper for use at the first national marina conference. At the national level, DCR staff continues to work with NOAA, EPA, Marine Environmental Education Foundation, and others to establish a national clearinghouse. Part of this effort was the participation by staff on the planning committee for the marina conference.

Areas of Concern for the Coastal Program

While Virginia continues to make progress on implementing the coastal nonpoint program, certain programmatic issues remain to be fully addressed at the federal level. First and foremost is the level of funding made available to states for this program. In Virginia, the coastal nonpoint program is only 12% of what is received for the Section 319 program. At a national level, the coastal nonpoint program is only four percent of the Section 319 program. This lack of funding inhibits the ability of Virginia to implement the coastal nonpoint program management measures through on-the-ground projects.

With the, recently passed, $2-billion federal Farm Bill, the financial role of the coastal nonpoint program in the agriculture arena must be re-evaluated at the federal level. The Farm Bill funding is 200 times greater than what is provided in the FY 2002 coastal nonpoint program grant cycle.

Future Actions for the Coastal Program

There are several ongoing projects that should be completed during the next reporting period. Two are focused on working with the health department's shellfish sanitation and onsite septic programs. We are also working with citizen monitoring groups on the development of an eastern Virginia monitoring protocol and updating their manual to incorporate coastal nonpoint program management measures. Other projects include integrated pest management and developing a shoreland planning protocol as a planning tool for local governments.

Since we are beginning the FY 2002 grant cycle for the coastal nonpoint program during the next EPA reporting period, we will be continuing work on developing reference reaches in the coastal zone, citizen monitoring, the clean marina program, and program implementation. All of these projects support implementation of action items presented in the *1999 Nonpoint Source Pollution Management Program* document.

Project Highlight: Virginia's Karst Program

The Virginia Karst Groundwater Protection Program is funded by a Section 319 grant and managed by DCR's Division of Natural Heritage (DCR-DNH). The Karst Program works with groundwater and non-point source pollution problems in the 27 karst counties of Virginia. The program staff continued to perform data development, environmental response, and outreach services. These activities addressed a variety of nonpoint source pollution issues in the vast portions of 26 counties in western Virginia that are underlain by, or upslope of, karst topography.

A major data development endeavor consisted of hydrogeologic investigations to delineate conservation site boundaries for Virginia's nearly 400 significant caves, supported in part by the Cave Conservancy of the Virginias and VDOT. In Augusta County, staff assisted the Biological Systems Engineering Department of Virginia Tech in delineating the source(s) of the headwaters of Mossy Creek, where TMDL development has been complicated by the fact that over 90% of the streams base flow originates outside of the surface watershed. Ongoing investigations in Warren County will be used to develop an emergency response plan for an industrial park being built over karst.

Karst program staff provided comment on numerous public and private projects with demonstrated, or potential, impacts to karst groundwater. A major highlight was the CPV Warren project, where outfall from a proposed Gas-Oil Electrical Co-generation facility was to enter a sinkhole. Staff discovered a previously

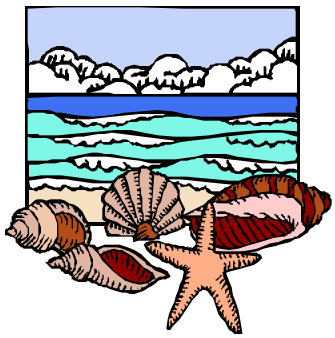
undocumented population of *Antrolana lira*, the Madison Cave Isopod, on the site. This species is listed as threatened under both state and federal endangered species acts. Negotiations with the company produced a win-win outcome, as the basin design was modified to minimize the potential of groundwater contamination, and money was set aside for land preservation and monitoring.

In the karst program's longest continuing environmental response project, staff leads an interagency effort to restore water quality to Batie Springs, in Lee County. Toxic leachate from vast sawdust accumulations has produced a severe dissolved oxygen impairment, making the spring inhospitable to most aquatic life. The Tennessee Valley Authority, US Fish and Wildlife Service, Cave Conservancy of the Virginias, and Black Diamond RC&D have partnered with DCR to transport the sawdust to mined-land reclamation sites, where it is being incorporated as a beneficial soil amendment.

Numerous state and federal agencies, conservation organizations, local governments, businesses, and citizens tapped karst program expertise. Notable examples include coordination with the US Fish and Wildlife Service on stormwater issues associated with the new Lee County Airport, consultation with NRCS to develop a standard for sinkhole repair, and assistance to several localities in the development of karst zoning overlays and review of proposed developments. Karst program staff is partnering with DCR's urban programs to develop best management practices for stormwater management in karst. In support of this, the first in a series of workshops was held, attended by over 60 stakeholders, including local government officials, private consultants, and state and federal agency staff.

The karst program contains a strong educational component that achieved many successes during the reporting period. Some of the accomplishments were:

- 14 Project Underground workshops where held across Virginia in 2002. (Project Underground is an environmental education program designed to teach about karst issues in the classroom.) Over 200 teachers where given information and lesson plans on issues in karst areas, including groundwater, unique habitats and non-point source pollution problems. The teachers then used the information in their classrooms to reach over 2,000 students.
- 7 Project Underground workshops are already planned for 2003, including a facilitator workshop to train educators to lead Project Underground workshops.
- 6 classroom presentations at Indian Valley Elementary School in Floyd County and provided materials and the 'Bare Foot Cave' to an alternative school for students living at St. Albans, in Radford Va.
- Assisted at the Children's Groundwater Festival held at the Breaks Interstate Park on September 19th, attended by two hundred 6th grade students from Dickenson County.
- Presented an on-line UVA graduate class on karst and groundwater for teachers at the Holton Governor's school for Southwest Virginia.
- Gave a presentation entitled, "Karst and the SOL's" at the Virginia Association of Science Teachers meeting.
- Presentations at the Virginia Association of Soil and Water Conservation Districts' annual meeting of SWCD directors and employees.
- Exhibited a "Karst and Groundwater" display at the Farm and Family Fun Show in Blacksburg.



Future Actions

The considerable numbers of impaired waters and the challenge of restoring the Chesapeake Bay and its tributaries represent major challenges for the Commonwealth of Virginia. In addition, issues related to funding availability and flexibility will continue to present a challenge during the ensuing year and beyond. In the long-term, meeting the water quality challenges facing the commonwealth will require new levels of funding and new thinking about how to reduce the water quality impacts of land development.

For the ensuing year, the focus will remain on implementation of the priority elements of the Nonpoint Source Pollution Management Program and the implementation of corrective actions in impaired streams, where implementation plans are available.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